

# **The Maryland Department of Housing and Community Development**

## **The Community Development Administration**

### **UPLIFT**

## **Design and Construction Standards**

### **Requirements for All Developments**

Affordable housing financed under the Maryland Department of Housing and Community Development (MD DHCD) Community Development Administration's (CDA) Single Family Development Program (SFDP) involve the use of public resources and therefore require adherence to standards of safety, accountability, quality, cost-effectiveness, and the execution of concomitant project requirements. Projects will therefore meet the following standards for project administration, design, construction, maintenance, marketing, and aesthetics.

Most of the following will be regarded as minimal or threshold requirements. In some programs however additional evaluation points are given to encourage quality, performance, or durability above even these very high standards. There is therefore also a section identifying what the hurdle levels are for a project to receive points.

### **Administration**

In the Department's long experience, consistent programmatic project success depends on effective collaboration, communication, and clear lines of mutual accountability among all involved. Therefore, all projects will be built according to CDA approved plans and specifications under the CDA approved contract. The project's Architect of Record will so certify after work has been completed and will affirm that she or he has adhered to the current AIA Code of Ethics.<sup>1</sup> Any modifications or changes in the project's contract documents will be made in writing and approved by CDA.

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<sup>1</sup> [https://content.aia.org/sites/default/files/2020-12/2020\\_Code\\_of\\_Ethics.pdf](https://content.aia.org/sites/default/files/2020-12/2020_Code_of_Ethics.pdf)

All projects must demonstrate compliance with all applicable State and local building codes, which includes the latest version of the Building and Energy Code and the accessibility code incorporated by the Maryland Codes Administration into the Maryland Building Performance Standards (MBPS).

All work performed at the property must be managed and completed by a single prime Maryland-licensed contractor (GC) contracted by the developer. In no event may work be self-directed or self-performed by the developer unless the developer's construction arm is the contracted prime GC and CDA has approved, in writing, the developer's construction arm as the prime GC. The installation of materials, equipment, products, and building systems in both New Construction and Rehabilitation shall adhere to all manufacturers' requirements, specifications, and recommendations. All developments are to comply with applicable accessibility codes and standards, including but not limited to the USBC, the Fair Housing Act Design Requirements, and all accessibility commitments made through the LIHTC application process.

## Departmental Signage

All new construction and rehab job sites shall have signage as approved by the Department posted.

## Construction Categories

The Department classifies construction in four types:

1. **New Construction:** which includes gut renovation and adapted reuse projects: Structural elements are essentially replaced or created and new systems are installed.
2. **Substantial Rehabilitation:** Structural Elements largely remain and two or more systems are replaced.
3. **Moderate Renovation:** Structural Elements essentially remain and no more than a single System is replaced.
4. **Modest Renovation:** Neither Structural Elements nor Systems are replaced. Appliances are replaced, surfaces refreshed.

## Safety

There is no higher priority on any project than the safety of workers, residents, vendors, third-party consultants, visitors, and neighbors. All projects will have a safety plan approved by the Department before the project begins. Any unsafe conditions that arise on the site project will be addressed before any other activities can take place. Sites are to be maintained in stable, clean, and orderly condition. All new construction and rehab job sites shall have a Safety Rules sign posted.

## Safety Supplies

All job sites shall be adequately stocked with the safety supplies needed to complete the tasks assigned for that date, to include: dust masks, gloves, safety glasses, harnesses, etc...

## Sanitary Facilities

A portable Sanitary Facility shall be present for every work site volunteers could be reasonably expected to work a 6 hour shift. A Sanitary Facility may be required for single events if no other options are available.

## Job Fuel

Fuel cans should follow OSHA standards for safety with a spring loaded lid and have a funnel designed for use with Fuel. This code is for fuel for generators or temporary heat, not for supervisors vehicles.

## Environmental

Projects receiving energy program funding will detail compliance with any additional program requirements to DHCD if the project is approved for funding in the appropriate underwriting submission.

Homes will meet one of the following standards for healthy, resource-efficient housing:

<b><i>Standards Entity</i></b>	<b><i>Rating Components</i></b>	<b><i>Website</i></b>
US EPA	Energy Star. WaterSense, Indoor Airplus	<a href="https://www.energystar.gov/sites/default/files/National%20Program%20Requirements%20Version%203.1_Rev%2011.pdf">https://www.energystar.gov/sites/default/files/National%20Program%20Requirements%20Version%203.1_Rev%2011.pdf</a>
Enterprise Green Communities	Current Enterprise Green Communities Criteria	<a href="http://www.enterprisecommunity.org/green">www.enterprisecommunity.org/green</a>

<b><i>Standards Entity</i></b>	<b><i>Rating Components</i></b>	<b><i>Website</i></b>
U.S. Green Building Council (USGBC)	Current LEED version as appropriate to project type.	<a href="http://www.usgbc.org">www.usgbc.org</a> <a href="https://www.ngbs.com/the-ngbs-green-promise">https://www.ngbs.com/the-ngbs-green-promise</a>
Southface	Current Earthcraft version appropriate to , as updated	<a href="http://www.southface.org">www.southface.org</a>

## **GHG**

Chlorofluorocarbons (CFC) – Where new HVAC equipment is specified, there must be no use of CFC refrigerant. Where CFC refrigerant equipment is being removed, specify standards for capturing and disposal of CFC materials. For retained CFC refrigerant equipment, include a comprehensive inspection, maintenance, and phase out or conversion plan.

## **Environmental Issues & Hazards**

### **Indoor Air Quality**

#### **Paints**

The project shall make primary use of all of the following Interior Air Quality criteria: low toxic, low volatile organic compound (VOC) paint, primer, sealers, and adhesives. The architect must reference a national standard such as Green Seal, South Coast Air Quality Management District, Bay Area Air Quality Management District, or equivalent standard. In addition, unsealed engineered or composite wood products free of added urea formaldehyde must be used. (See American National Standards Institute (ANSI) A208 or current.) The architect must verify compliance with use of green products during the submittal review and construction verification process.

#### **Carpets/Floor Coverings**

Any carpet products must meet the Carpet and Rug Institute's Green Label or Green Label Plus Certification for carpet, pad, and carpet adhesives. Waivers of this

requirement may be requested for existing projects with recently installed carpet products.

### **Mold, Moisture, and Mildew**

Correct all observed areas of mold, mildew, and moisture infiltration within the building. On existing structures, the Building Evaluation Report or environmental report must identify these areas. Plans or specifications must anticipate and identify remedies and accepted practices for treatment. Detailed plans must be included in the Development Quality Threshold Narrative portion of the application.

### **Radon**

For Projects located in EPA Radon Area Zone 1, install a passive radon gas reduction pipe system with vertical venting convertible to mechanical venting unless testing indicates there is no radon gas hazard as determined by EPA standards. This requirement is only for projects in EPA Radon Zone 1 where radon gas poses a legitimate hazard.

### **Lead**

Per MDE Requirements:

<https://www.epa.gov/lead/real-estate-disclosures-about-potential-lead-hazards#homebuyers>.

### **Habitat Protection**

Where development of the project removes the prime habitat for a protected or endangered species, the developer must provide an offsite conservation lease or easement for a replacement habitat which is a minimum of three times the area of the habitat lost in the development of the project or consistent with State or Federal requirements, whichever is greater. The conservation lease or easement shall be a minimum of fifty (50) years.

### **Water Conserving Features**

Project water fixtures and faucets must conserve water with toilets that use 1.28 gallons per flush or less and shower heads and bath and kitchen faucets that use 2.0 Gallons Per Minute (GPM) or less.

### **Waste Management**

Provide a plan both for construction phase waste.

In the project design, provide space and containers on site for household recycling. Provide a plan to accommodate space for household recycling. Encourage residents to recycle. Address recycling in buyer education and management plan.

### **Resiliency**

Projects will not be located in an area with nearby land uses that are inconsistent with residential activities nor are projects located in FEMA Flood Zone Areas except zones C or X which are minimal risk areas.

## **Roles and Responsibilities**

In addition to the construction contract's requirements, projects will have concomitant requirements which may include M/WBE goals for subcontracting, local hiring, wage rates, and economic opportunity initiatives whether under the aegis Davis-Bacon, Section 3, or otherwise. The Department regards the satisfactory performance of required activities in these areas as material to its decision to invest resources in the project and, accordingly, as very high priorities.

## **Concomitant Requirements**

In addition to the construction contract's requirements, projects will have concomitant requirements which may include M/WBE goals for subcontracting, local hiring, wage rates, and economic opportunity initiatives whether under the aegis Davis-Bacon, Section 3, or otherwise. The Department regards the satisfactory performance of required activities in these areas as material to its decision to invest resources in the project and, accordingly, as very high priorities. These may include local hiring or so-called Section 3 goals, or Davis-Bacon wage rates.

## **Accessibility**

All sales offices and model units are to meet the latest USBC accessibility requirements. The project must meet visitability standards for at least 25% of its units and incorporate universal design features in its units and common areas.

## **Site Assessment**

The Department expects that project's will be built to specified quality, on time and on budget. An accurate understanding of site conditions is essential to achieving those critically important goals. All sites however are different and each project's program of due diligence will vary as a result. The Department will therefore work in concert with the applicant to ensure that all sites will be investigated adequately to give the project a well-founded basis for its scope of work and specifications as well as its budget and schedule.

## **Demolition and Site Clearing**

Demolition and removal work shall consist of demolishing, removing and disposing of all structures and improvements within the construction limits. This work shall apply to all structures and improvements, whether on, above or below the surface of the ground or subgrade. Demolition and removal shall include but not be limited to items such as buildings, drainage structures, pipes, pavements, fences, retaining walls, guard rails and signs.

Clearing shall consist of removing all vegetative matter such as trees, brush, downed timber, and other objectionable materials found on or above the surface of the site. It shall include: removing buildings, fences, and lumber; waste dumps and trash; salvaging of such materials as may be specified; and disposing of the debris as per public entity requirements.

Perimeter erosion and sediment controls must be in place before clearing activities occur.

Grubbing shall consist of removing and disposing of all vegetative matter such as stumps, roots, buried trees, and brush encountered below the surface of the ground or subgrade, whichever is lower, that has not been included in the description of clearing. When deleterious materials.

## **Driveways, Sidewalks, Other Flatwork, and Masonry**

### **Driveways (Crushed Stone)**

Subgrade – If possessed of adequate bearing capacity the driveway subgrade can be compacted soil situated at the bottom of the area excavated for the drive. Otherwise on crumbly, loose, or otherwise inadequate soils issues, remediate and compacted for a firm foundation.

Sub-base - Crushed stone that sits on top of the subgrade.

Base - Smaller crushed stone than the sub- base layer. Ensure the absence of voids.

Surfacing Material - The gravel poured on top of the base layer will complete the crushed stone driveway. Selected material will have positive functional properties, but also for its appearance and esthetic value.

### **Sidewalks**

Provide adequate and uniform compaction and preparation of the subgrade beneath the sidewalk upon which lay a granular subbase layer between the compacted subgrade and the concrete slab. Adhere to temperature limits when scheduling pours.

### **Concrete Under-Slab Preparation**

Earth where slab is to be poured shall be cut out a minimum of 8" below finished grade of concrete slab. The existing earth at sub level shall be tamped for optimum compaction to

prevent settling and movement. Once compaction is complete, 4" of compacted gravel is to be installed with a minimum 6 mil clear poly is to be installed on top of stone.

**Reinforcement:** Six inch Welded Wire Fabric is to be installed and placed on 2" chairs to hold wire in center of poured slab. Asphalt Fiber Expansion joints shall be installed where slab meets foundation vertical walls.

**Concrete Slab:** Concrete shall be a standard premixed material with a minimum 2500 psi rating and a fiber reinforcing. Asphalt Fiber Expansion joints will be installed where pour ends and new day pours begin. No anti-freeze additives shall be used.

## **Masonry**

Masonry foundation block units shall conform to section 202-2.1.1 of the Standard Specifications. Unit size shall be 16"x8"x8". Half inch Rebar shall be installed vertically in the foundation wall every 2' apart and these cells will be filled from bottom to top with concrete. Anchor bolts (1/2"x14" with an L)(the anchor bolts will have a minimum 2 1/2" projection) will be installed every 4' and in between 6" to 12" from the ends of the sill plate in accordance with a proposed layout. These cells are to be filled with concrete also. Mortar Joints shall be left clean with all excess mortar to be removed. Blocks shall be cut accurately and/or filled with grout at corners and openings such as crawl space entrance, sump pump discharge, etc... The entire foundation shall be 5 courses of blocks in height and the exterior surface shall be parged with a semi-swirl pattern. Foundation Piers shall be 24" x 24". Water proofing shall be applied over parging at and below grade.

## **Landscaping and Sheds**

**Landscaping** – New plantings shall utilize at least 50% native or regionally adapted plantings. Select native, highly suitable, drought /disease tolerant plantings suitable for the project soil and microclimate. Where there are healthy large existing trees, consider preserving mature trees in the site plan. Utilize shade, windbreak and screening benefits of plantings in the project design. Protect trees and root zones during construction. All planting and sods will be done at seasonally appropriate times with adequate watering and care.

All Sheds shall be built upon a 3.5" thick minimum 3000 psi monolithic poured slab on grade. Shed shall be framed using Pressure treated lumber at all area in contact with concrete or the ground. Bottom plate shall be attached to the concrete slab with 2 1/2" anchor bolts poured into the slab, or with 1/2" wedge anchors spaced no more than one foot from each corner and two feet in the field. Sheds shall be approximately 8'X8'X8' in size with a gable roof. Exterior walls are to be framed using 2x4 spf studs with pressure treated bottom plate and double spf top plate. 2x6 rafters are to line up with studs on the wall and be attached to the top plate using hurricane clips. 1/2" OSB plywood is to be used on the exterior of the walls and covered with house wrap such as Tyvek. 3-0 x 6-8 exterior fiberglass door with deadbolt and standard



handle bore shall be installed, keyed to match the house when possible. The door shall be centered on the "front" of the shed and gable ends shall be on the door side. All other exterior finishes shall match the house to include: corners, siding (1x6 composite trim shall be installed at the base with siding above), fascia, trim, roofing materials, and anything not specifically mentioned here.

## **Closeout and Submittals**

### **Operation and Maintenance**

For split-system air-conditioning units to include in emergency, operation, and maintenance manuals. In addition, there will be at least one session to train homeowners on use and maintenance of thermostat and units. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Filters: One set for each return grille.

Gaskets: One set for each access door.

Fan Belts: One set for each air-handling unit fan.

Warranties: TBD, but minimall

Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

Warranty Periods:

For Compressor: Five years from date of Substantial Completion.

For Parts: Five years from date of Substantial Completion.

For Labor: One year from date of Substantial Completion.

Warranty period for Windows?

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### **MANUFACTURERS**

Basis-of-Design Product: Subject to compliance with requirements, provide high efficiency

Indoor Air Handling Unit and Outdoor Heat Pump Unit models as scheduled on the drawings or comparable product by one of the following: Carrier, Trane, York (Johnson Controls, Inc.)

## **Requirements for New Construction**

### **SITE ASSESSMENT**

As the site requires, assess all relevant site characteristics including by identifying any hazardous materials/conditions such as asbestos, lead paint, radon, recalled drywall, mold on site and/or in buildings and contaminated soils. Determine the capacity of soils to support the project and impacts on surrounding areas, especially if sensitive.

Address or abate all hazardous materials per applicable regulations. Submit abatement certification to CDA if requested.

### **SITE WORK**

New construction sites will provide a firm, stable, water-shedding, accessible basis for the housing resting upon it. Therefore:

1. Finished floor elevations of buildings are to be a minimum of 8 inches higher than the adjoining finished grade. When achieving an 8-inch height separation is not feasible, due to accessibility requirements or other conditions, provide an alternate solution acceptable to CDA.
2. Areas around buildings are to be graded to have a minimum 5% slope away from foundation walls for a minimum distance of 10 feet, per *IBC*. Install yard drains, storm inlets, or drainage pipes under concrete walks to drain properly if the space between foundation walls and concrete walks is less than 10 feet. Drainage systems are to be designed to avoid water flowing over sidewalks. Provide an alternate drainage solution acceptable to CDA:
  - a. when buildings are closer than 10 feet to concrete walks
  - b. when a minimum 5% slope is not feasible
  - c. to avoid water draining over sidewalks
  - d. at accessible entrances, when applicable
3. Install seamless gutters and downspouts, or an internal drainage system for all buildings. When discharging on grades steeper than 20%, or less than 1%, water from gutters and downspouts is to be piped underground to a storm sewer

system, or to daylight at grades that will avoid soil erosion.

4. Paving designs are to be based upon the soil report, California Bearing Ratio (CBR) of the soil, traffic count, and loading. All drive lanes of parking lots are to be designed for dumpster trucks. Parking bays may have lighter paving than the drive lanes of parking lots.
5. Extend concrete dumpster pads at least 12 feet into the asphalt so that the load bearing wheels of trucks rest on concrete while servicing the dumpsters.
  - a. Thickness of concrete is to be a minimum of 6 inches with reinforcement.
  - b. Dumpsters and/or compactors accessed via an accessible route are to meet accessibility requirements.
  - c. Install a privacy screen on at least three sides of all dumpster and/or compactor pads.
6. Minimum width of sidewalks is to be 3 feet. Sidewalks that are located perpendicular to parking spaces are to be a minimum of 5 feet wide excluding curb or 3 feet wide with 2 feet of space between the sidewalks and curbs. Provide gravel and sand base under walks when required by the soil report. Provide control and expansion joints.
7. Site lighting shall not be obstructed by trees.
8. All plantings must be shown on landscape drawings illustrating size at full maturity. Show dimension of tree locations from trunks/calipers to buildings. Portions of tree branches when fully mature shall not overhang roofs or contact building faces. Field verify planting locations match initial design.
9. Grade to avoid standing water. Provide a smoothly graded transition from disturbed to undisturbed areas. Finish grade with clean topsoil. Seed and straw, and/or landscape all bare and disturbed areas. Provide ground cover materials or sod for slopes steeper than 20%. Provide foundation plantings in the front of all buildings. Clean site and dispose of all construction debris. Grass must be established prior to project closeout.

## ARCHITECTURAL

New construction architecture will provide durable, functional, attractive elements starting at the building's skin and through its interior spaces. Therefore:

## 1. ROOFING

- a. Roof sheathing thickness is to be a minimum of  $1\frac{5}{32}$ -inch-thick plywood or  $1\frac{5}{32}$  inch OSB. Install sheathing with clips. ZIP System roof sheathing or similar products are not accepted.
- b. Install drip edge on all sides of the roof.
- c. Install ice barrier extending from eave's edge to a point 24 inches beyond the exterior wall cladding.

2. Provide permanent access to all flat roofs. Access to be easily reachable and located in an interior common area.

### Coverings

The roof sheathing (Zip wall system or equivalent) must be applied using 2 3/8" ring shank nails with spacing of 4" at seams and 6" at fields using H clips at all horizontal spans between trusses. Ridge vent shall have a minimum spacing to meet manufacturer's specification. Ridge vent to be Cobra roll vent or equivalent. Hi-definition multi-layered capping shingles shall be used.

Underlayment to be synthetic (tiger paw or equivalent). Installed per manufacturer's recommendation.

Ice and water shield should be full width at eaves and gable ends and valleys and all slopes at 4/12 and less.

White F5.5 drip edge shall be used at all roof edges. Drip edge shall be installed flush against the fascia board.

Lifetime pipe collar with metal collars shall be installed at all roof penetrations.

3x5 mill finish step flashing shall be installed at all wall intersections.

30 year architectural shingles (Certainteed landmark or equivalent) installed to meet 130 mph wind speeds (6 nails per shingle) A starter shingle row and gable row MUST be installed. The starter shingles shall have an overhang of 1/2" minimum beyond the drip edge at all perimeters. NO 3 tab shingles are to be used anywhere on the roof.

Soffits and ridge are to be vented as to allow free flow of outside air through the attic

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area. Ceilings are to be insulated to a code minimum (currently R-49).

Any exposed fasteners must be sealed. No silicone shall be used on the roof.

4. Provide roofs/overhangs over exterior entrance doors to all units and buildings that are accessed by residents or visitors. Provide a minimum 30 inches of overhang along the front and 12 inches along each side of the door; or the door may be setback a minimum of 24 inches from the face of the exterior wall.

## **2. Rough Framing**

Exterior wood framing will be constructed of 2x6x92 5/8" with bottom plate and double top plate, SPF studs spaced 2' on center. Headers shall be 2x10 with 2x6 bottom plate, filled solid with wood. 5/8 OSB sheathing shall be fastened to the studs horizontally using 2 3/8" ring shank nails at 6" on center in the field and 4" on center on the seams. Stagger, 4 foot offset, seams as you go up the house. 2x6 blocking shall be installed on the exterior edge of the studs so as to give a continuous nailer block for the OSB to fasten to. Jack studs at doors and windows shall extend from header to bottom plate, sill plates shall be cut inside of jacks. All exterior openings less than 4' shall have a 2x10 solid construction with 2x6 bottom plate, one jack and one king stud each side. All openings 4' or wider shall have triple jacks and double king studs. All studs layout throughout the house should be continuous from the same starting point. All studs on each side of the house, and front and back, need to line up and the trusses should be lined up to be installed directly on top of the stud below. 2' metal straps shall be installed from the sill plate up each stud that extends from bottom plate to top plate. 2' metal straps shall be installed from stud to stud across flooring sill for second story construction. OSB shall be installed over the straps. "U" style hurricane straps shall be installed over the OSB on the exterior plane of the house. The overall idea is that there will be a continuous "rib" structure with straps in line from sill plate to truss connections.

Interior walls shall be 2x4x92 5/8" precut studs with bottom plate and double top plate. 2x6 studs shall be used on all plumbing walls (wet walls) installed at 16" on center spacing. Headers shall be 2x12 with 7/16" OSB in between, pushed up to the bottom of the top plate. Dead wood (blocking) shall be installed where required for Gypsum Wall Board install. Wood blocking shall be installed for cabinet, towel racks, and toilet paper holders, and other places as needed. Blocking shall be installed in bathroom walls at toilet for future install of grab bars if needed. All load points shall be constructed to carry load above.

The more stringent specification shall rule when this specification differs from local building codes. All local building codes must be met at a minimum.

## **2. Layout**

Designs will emphasize open floor plans optimizing functionality and flexibility.

### 3. STAIRS, CRAWL SPACES, & ENVELOPE

5. Crawl spaces to be free of debris and water. Provide a minimum 6 mil vapor barrier at floor with seams overlapped 12 inches. Edges and seams to be taped.
7. Install waterproofing on exterior walls up to finished grade where finished floors are below adjoining finished grades. Provide a 10-year material/manufacturer's warranty.
8. Install weep holes in brick veneer at foundation walls, over lintels, and relief angles.
  - a. Weep holes at foundation walls are to be a minimum 6 inches above finished grade.
  - b. Provide mortar mesh to prevent blockage of weep holes.
- c. Provide continuous flashing at all weep holes and end dams at flashing terminations.
9. At masonry and precast window sills, and caps for masonry veneer walls that do not terminate directly under roofs, provide a positive slope resulting in a minimum  $\frac{3}{4}$  inch differential over the length of the sill/cap.
10. All wood framing in contact with concrete or masonry is to be of treated wood.
11. Provide sill sealer for sill plates at all exterior walls.
12. All brick veneer or sidings, such as vinyl, aluminum, wood and fiber cement board, are to have a solid backing of plywood, OSB, gypsum, or similar material. Siding and brick are to be installed over an independent drainage plane, such as Tyvek® or equal. Fasten siding to framing with nails penetrating a minimum  $\frac{3}{4}$  of an inch into studs. Install pre-manufactured mounting blocks for all penetrations in siding such as electrical, plumbing, HVAC, etc.

EXCEPTION: Exterior wall sheathing systems with integrated drainage planes may be used when observation reports are provided by the manufacturer and the following conditions are met: 1) Pre-installation

- a) General Contractor to hold pre-installation meeting with architect and manufacturer prior to installation. Manufacturer's observation reports to include documentation of meeting.
  - b) Manufacturers' flashing details including windows, doors, joints and penetrations must be maintained on site.
  - c) Store materials to meet manufacturer's requirements.
- 2) Installation
- a) The integral drainage plane must be preserved. Use manufacturer's approved products including tape, tape gun and roller.

- b) When weather conditions warrant, follow manufacturer's requirements for inclement weather installation and storage of materials.
  - c) Manufacturer's representative to review the final installation to confirm all requirements are met **prior** to installation of exterior cladding. Manufacturer's observation reports documenting installation acceptance is required and must be maintained on site.
13. All panel type siding to be installed over vertical furring to allow adequate drainage and ventilation, or provide siding product with integrated vented rain screen.
14. The use of foil faced sheathing is prohibited.
15. The bottom of all siding and window sills are to be a minimum of 6 inches above the finished grade or mulch beds.
16. Exterior wooden trim, brickmolding, sills, fascia, rake boards, and columns, are to be clad with vinyl, vinyl coated aluminum, or similar materials. Use materials designed for cladding with a minimum thickness of 0.019 inch and provide a stiffening crimp for trim and fascia boards are more than 8 inches wide. CDA recommends the use of low maintenance composite/manufactured materials instead of wood for exterior use.
17. Powder coat or galvanize all exterior steel products, or provide an exterior steel paint that can achieve a minimum 10-year material warranty. Prepare surfaces per warranty requirements. Prime and paint steel prior to placement in concrete.
18. Use vinyl, aluminum, or steel for exterior railings, handrails, guardrails, posts and pickets instead of wood products.
19. Windows and sliding glass doors:
- a. Provide minimum ½ inch insulated glass.
  - b. Provide minimum 10-year warranties for material and breakage of seal.
  - c. Provide thermal break for aluminum frames.
  - d. Install and flash per manufacturer's specifications.
  - e. Provide back dam flashing at sill.
- f. Before installing windows; perform initial installation with the Construction Control Officer.
20. All exterior doors, except sliding glass doors, must be either insulated fiberglass or insulated metal. Exterior wooden door jambs and molding require composite

material, such as FrameSaver® or equal, at their lowest points.

### **3. FLOORING and Stairs**

21. Install hard surface flooring at the interior of all entrance doors, except for doors entered through carpeted interior hallways. Hard surface area is to be approximately 3 foot by 4 foot using flooring materials such as VCT, sheet vinyl, hardwood, or tile.
22. Resilient flooring such as, but not limited to, sheet vinyl and VCT is to be installed over minimum nominal  $\frac{1}{4}$  inch underlayment grade plywood, or similar underlayment material. Ceramic tile or similar flooring is to be installed over a minimum nominal  $\frac{1}{4}$  inch cementitious board or similar underlayment material. Flooring may be installed over concrete provided concrete is finished smooth and uniform. When installed over Gypcrete, or a similar material, apply manufacturer approved sealer.
23. Carpets are to have the minimum number of seams. Seams are not to be located in heavily trafficked areas. T-seams are not acceptable except in closets.
24. All interior doors are to be side hinged. Bifold, pocket, or sliding doors are not acceptable. Install or undercut doors a minimum of  $\frac{3}{4}$  inch clear to prevent dragging and to provide ventilation. Paint bottom top and all other sides of doors. All doors must be factory assembled. Field modifications, such as but not limited to, cutting vents in doors is prohibited. Instead, pre-manufactured louvered doors must be installed
25. All unit interior spaces must have finished floor and solid wood base/molding. Base and base moldings are to match in design and finish.  
EXCEPTIONS:
  1. Ceramic or stone baseboard is acceptable at matching adjacent flooring.
  2. Mechanical closets may use an alternate base material such as vinyl.
26. All common area interior spaces must have finished floor and base.

Interior wood stairs shall be pre made box style construction with "clear pine" finish. The treads and risers shall be painted or stained to match trim and floor as close as possible. Handrails going in the stairwells shall meet local codes and be painted or stained to match the stairs.



## 4. WINDOWS & CLOSETS

27. All windows are to have blinds, shutters, or other similar products, and sliding glass doors are to have vertical blinds.
28. Provide a minimum of one full-height closet of at least 6 square feet for general storage in a location other than a bedroom.

Window trim: WM376 and a 1/4" primer painted board for the interior jamb extensions. Standard Sill board shall be used as the sill.

Baseboard trim: WM623 for base molding and WM129 quarter round, all primer painted.

## 5. BATHROOMS

29. Provide a minimum of 1 ½ bathrooms (one full bathroom and one half bathroom) in all two bedroom units and a minimum of 2 full bathrooms in all three or more bedroom units.
30. Concealed solid dimensional wood blocking (2x material) is to be provided for all handrails, grab bars and wall mounted cabinets and accessories.
31. Tub and shower surrounds built of ceramic tile, marble, or similar materials are to be installed over a minimum ½ inch cementitious board.

## 5. KITCHENS

32. Provide a pass-through opening with counter space when kitchen and dining/living areas are separated by a wall.
33. Kitchen cabinets and bathroom vanities are to comply with *CDA's Minimum Cabinet Requirements*:
  - a. All cabinets are to be factory/manufacture assembled.
  - b. All exposed portions of cabinetry must have factory applied finish.
  - c. Kitchen cabinets and bathroom vanities are to abut the side walls or provide a minimum spacing of 12 inches between wall and cabinets. Wall cabinets are to abut the ceiling/soffits or provide a minimum of 12 inches between cabinet and ceiling/soffits.
  - d. Kitchen wall cabinets are to be fastened to blocking with a minimum of four washer head cabinet screws; two in each upper and lower nailing strip for each wall cabinet.

- e. Plastic laminate countertops are to be post formed, or have back splashes that are factory attached to the countertop and sealed.
  - f. A side splash is to be installed where countertops abut walls.
  - g. Holes in cabinet backs for plumbing are to be drilled and completely covered by escutcheon plates.
  - h. Provide at least one base cabinet with drawer, minimum 15-inch-wide.
34. Install a cleanable surface, such as plastic laminate, metal, or ceramic tile on the sidewall next to the cooking range when it is located directly adjacent to a wall. Materials such as plastic laminate or metal are to be installed with adhesive.
35. APPLIANCES
- a. Provide 30-inch-wide range in all units except studio/efficiency units and one bedroom elderly units, which may have a minimum 20-inch-wide range. Provide maximum 24-inch wide range hood for all 20-inch-wide ranges.
  - b. Provide a range hood or combination range hood-microwave over all cooking ranges.
  - c. Provide a 24-inch-wide dishwasher in all units, except for studio/efficiency units, which may have 18-inch-wide dishwashers.
  - d. All refrigerators are to be frost free. Minimum rated sizes of refrigerators are to be 12 cubic feet for studio/efficiency units, 14 cubic feet for 1 and 2 bedroom units, and 16 cubic feet for 3 and 4 bedroom units. Side-by-side models must open fully or have at least 12" of cabinetry between an adjacent sidewall.
  - e. Provide laundry equipment, or connections for full-size side-by-side or full-size stack type washers and dryers, in all units. When provided, laundry equipment and connections shall be installed in a closet with doors in a location other than a bedroom. Otherwise, provide onsite laundry facilities.  
Exception: Studio and one bedroom units may utilize a bedroom closet for laundry equipment provided equipment does not impede on tenant storage, an exhaust fan with humidistat is installed in the closet, and a jumper duct is provided to communicate with return air location. (See "Plumbing" section for washing machine pan requirements.)
  - f. All kitchen appliances in an apartment unit are to match in color.
37. Where a permanent dehumidification system is not provided for all units, provide space for a future dehumidifier in a stud cavity within the apartment living space. Utilize concealed power and plumbing drain (e.g. mechanical closet). Identify location in drawings and coordinate with plumbing and electrical.

## Porches

All front porches shall be concrete with brick stairs and

Back porches shall be framed with pressure treated lumber, composite planks (Trex or equivalent). Columns above the porch line shall be pre-made vinyl column or composite wrapped around 4x4 or 6x6 pressure treated posts. Handrails shall be made of vinyl to match the front porch. Pressure treated framing material shall be wrapped in 4 white composite board or material to match the tread material. Risers shall have 3/4" composite material or tread material installed so that you cannot see through the steps

## MECHANICAL

New construction mechanical systems will be durable, operator-friendly, cost-effective, and will contribute to the reduction of Greenhouse Gas Emissions from the Maryland housing stock.

Therefore systems will:

1. Provide Heating, Ventilation, and Air Conditioning (HVAC) equipment with R-410A refrigerant in all dwelling units. All units are to have ducted HVAC systems except as noted in #3 below. Size of HVAC equipment, ducts and diffusers are to be designed per heat gain/loss calculations.
2. For all ducted HVAC systems including ducted mini-splits and self-contained packaged systems (similar to Magic-Pak or First Co):
  - a. Air supply diffusers are to be located near windows in living rooms, dens and bedrooms. EXCEPTION: The mechanical engineer may locate supply diffusers at alternate locations with CDA's prior approval based on supporting calculations.
  - b. Provide HVAC diffusers for kitchens and all full baths.
  - c. Provide pre-manufactured air filters.
  - d. Seal air duct penetrations in unheated spaces.
  - e. Refrigerant and condensate lines are to be concealed within walls. Seal all penetrations
  - f. Provide ducted return air grille. Provide a separate ducted return for each floor of townhouse units.
  - g. Heat pump to include auxiliary heat.
  - h. Main supply trunk line from air handler to branch duct shall be metal. Flex duct may be used only between main trunk line and supply diffuser. Fiberglass duct board is prohibited.
  - i. All ductwork must be concealed behind

permanent construction unless otherwise approved by CDA.

3. Ductless Heat Pumps (mini-splits) may be used provided.
  - a. All mini-splits are to discharge condensate to grade through a pipe concealed within the exterior wall system.
  - b. Provide separate mini-split wall mounted unit for each bedroom, den or living room.
  - c. Provide separate wired wall mounted thermostat for each mini-split wall mounted unit.
  - d. Provide a heater with a thermostat or timer controlled heat lamp for all full baths.
4. All exhaust ducts are to discharge to the exterior of the building, and terminate into vent caps. Vent caps to be of a quality that will minimize repair and replacement.
5. Do not install condenser units in front of windows.
6. Electric baseboard heating and electric forced air heating shall not be used as the primary heating method.

## PLUMBING

Plumbing and related appliances in new construction projects will be durable, operator-friendly, cost-effective, and will contribute to the prudent, sustainable use of natural resources by the Maryland housing stock. Therefore plumbing systems will:

1. Clothes washing machines or connections for clothes washing machines are to have a pan, with a drain, connected to the sewer system per applicable plumbing code.
2. The bottoms of bathtubs are to have slip resistant/textured finish.
3. All tubs/showers and shower diverters are to have internal shut-off-valves or external shut-off valves with access panels.
4. Depress the entire bathroom floor and build up as needed to account for accessibility and drainage requirements when designing for roll-in showers. Bathrooms which include a roll-in shower, are to have ceramic or similar tile flooring, with a minimum of 3'-0" positively sloped towards the shower drain at a maximum 2%. Roll-in showers are to be either:
  - a. Ceramic or similar tile floor with water proofing membrane extending a minimum 8" up walls, and a zero height transition between the bathroom floor and the shower floor, - or -
  - b. Pre-manufactured with a trench drain located

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immediately adjacent to, and the full length of, the shower.

6. All pipes to be concealed behind permanent construction. All wet plumbing pipe to be solid wall construction (Cellular core pipe not permitted).
  7. All floor drains and indirect waste receptors to receive trap primer or code approved drain trap seal device.
  8. Seal around all plumbing penetrations in floors, walls and ceilings.
  9. When installing electric water heaters provide the following minimum rated sizes:
    - a. Studio/1BR units 30 gallon
    - b. 2BR units 40 gallon
    - c. 3BR units 50 gallon
  10. Provide hub drain in mechanical closet to accept overflow pan and condensate lines.
  11. Vanities may not be installed within 12" of tub or showers.
  12. Where wall-hung lavatories, roll-under sinks, or pedestal sinks are installed, provide an alternate storage solution complying with code required reach ranges and other accessibility requirements, which may apply to the unit.
- A gasketed covered sump pump is to be installed to remove any intrusive water and directed to the outside of the footing area. Sump pump shall be located near the crawlspace entrance.

## Fire Suppression

NFPA 13D is the standard for the installation of sprinkler systems in one- and two-family dwellings and manufactured homes.

This standard shall cover the design, installation, and maintenance of automatic sprinkler systems for protection against the fire hazards in one- and two-family dwellings and manufactured homes. This standard shall not provide requirements for the design or installation of water mist fire protection systems, which are not considered fire sprinkler systems and are addressed by NFPA 750. This standard shall be based on the concept that the sprinkler system is designed to protect against a fire originating from a single ignition location. The purpose of this standard shall be to provide a sprinkler system that aids in the detection and control of residential fires and thus provides improved protection against injury and life loss. A sprinkler system shall be designed and installed in accordance with this standard to prevent flashover (total involvement) in the room of fire origin, where sprinklered, and to improve the chance for occupants to escape or be

evacuated.

## **ELECTRICAL**

New construction electrical systems and related appliances will be durable, operator-friendly, cost-effective, and will contribute to the prudent, sustainable use of natural resources by the Maryland housing stock. Therefore electrical systems will:

2. Kitchens are to have a minimum of one light fixture 4 feet long with either LED or two 32 watt fluorescent bulbs, or lighting fixture(s) that provide a minimum illumination of 30 foot candles distributed across all countertops.
3. Pre-wire cable TV and internet outlets for all bedrooms, living rooms, family rooms, and dens. Provide a minimum of one landline telephone outlet in each unit. All wiring for the interior and exterior of the building is to be concealed within the walls.
4. Exterior fixtures are to be LED, fluorescent, metal halide, high or low pressure sodium, or mercury vapor. Provide illumination so that building numbers and apartment numbers are legible at night.
5. Seal around all electrical penetrations.
6. Provide resident controlled light fixtures at all patios and balconies.
7. Where a permanent dehumidification system is not provided for all units, provide an outlet for a future dehumidifier. Identify outlet location in drawings and coordinate with architectural. Locate outlet such that when dehumidifier is installed, power cord will not be visible from a habitable space.

## **Requirements for Rehabilitation**

### **SITE ASSESSMENT**

As the site requires all relevant site characteristics including by identifying any hazardous materials/conditions such as asbestos, lead paint, radon, recalled drywall, mold on site and/or in buildings and contaminated soils. Address or abate all hazardous materials per applicable regulations. Submit abatement certification to CDA if requested.

# SITE WORK

Rehabilitation projects will rest upon a firm, stable, water-shedding, and accessible basis.

Therefore:

1. Identify areas that require grading to drain water away from buildings and areas where adjoining grades are higher than finished floor of buildings:
  - a. Provide a minimum distance of 6 inches between finished grade or mulch beds, and the bottom of siding and window sills.
  - b. Provide a minimum of 5% slope away from foundation walls, for a minimum distance of 10 feet.
  - c. Provide alternate solutions acceptable to CDA when required grades, slopes, or other site conditions make the above requirements infeasible.
2. Provide seamless gutters and downspouts for all buildings, or an internal drainage system. When discharging on grades steeper than 20%, or less than 1%, water from gutters and downspouts is to be piped underground to a storm sewer system, or to daylight at grades that will avoid soil erosion. Avoid water drainage over sidewalks.
4. Concrete that is cracked, crumbling, spalling, heaving or settling, or may be a safety issue is to be repaired or replaced. Provide a solution acceptable to CDA if any of these conditions exist. Sidewalks at new locations to comply with new construction guidelines.
5. Asphalt that has cracking, alligatoring, or a deteriorating sub-base is to be repaired or replaced. Provide a solution acceptable to CDA if any of these conditions exist. Paving at new locations to comply with new construction guidelines.
6. Remove all dead bushes, trees, tree-stumps, and their above-ground roots. Remove all portions of tree branches that overhang roofs or contact building faces. Remove trees with root structures that may compromise building foundations. New plantings must comply with new construction requirements.
7. Grade to avoid standing water. Provide a smoothly graded transition from disturbed to undisturbed areas. All areas which have dead grass are to be tilled. Seed and straw, and/or landscape all bare and disturbed areas. Finish grade with clean topsoil. Provide ground cover materials or sod for slopes steeper than 20%. Provide foundation plantings in the front of all buildings. Clean site and dispose of all construction debris. Grass must be established prior to project closeout.

# ARCHITECTURAL

Rehabilitated housing will provide durable, functional, attractive elements starting at the building's skin and through its interior spaces.

## 1. ENVELOPE

The scope of work must include exterior renewal by providing any needed repairs and cleaning of finishes to provide an improved visual impact on the neighborhood.

Install waterproofing up to finished grades for all perimeter walls of finished and unfinished spaces where evidence of water, moisture, or mildew is present.

Waterproofing may be installed on the exterior or interior sides of the wall. The waterproofing systems to have a minimum 10-year manufacturer's warranty.

2. All debris and wood are to be removed from crawl spaces.
  - a. Install sump pump or drain tile discharging to daylight for any area accumulating water.
  - b. Install a minimum 6 mil vapor barrier at floor with seams overlapped 12 inches. Edges and seams to be taped. Provide adequate crawl space ventilation.
3. Remove all abandoned and non-operable equipment, devices and accessories. CDA may approve abandoned material that is secured, sealed and concealed.
4. Structural deficiencies are to be identified and corrected. If requested by CDA, corrective measures to be designed, inspected, and certified by a structural engineer.
5. Install minimum of R-19 insulation in unconditioned crawl spaces and basements and R-38 insulation in attics.
6. When replacing drywall at an exterior wall or replacing exterior sheathing, provide wall insulation at affected areas per the latest adopted edition of the International Energy Conservation Code.
7. Roof inspection reports are required for all roofs more than 5 years old. Report to include age and remaining life of roofs and areas that need repairs. Replace all roofs with a remaining life of less than 5 years. Repair or replace all roofs with damage or leaks.
8. When replacing pitched roofs:
  - a. Repair or replace all damaged sheathing, rafters, and/or trusses.

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- b. Replace all  $\frac{3}{8}$  inch sheathing with a minimum of  $\frac{15}{32}$ -inch plywood or  $\frac{15}{32}$  inch OSB. Install sheathing with clips. ZIP System roof sheathing or similar products are not accepted.
  - c. Replace all existing attic vents and pipe collars. Replace rusted or damaged flashing. Replace all existing sealant.
  - d. Roof shingles are to be a minimum 25 year, anti-fungal product, and are to be nailed (not stapled). Do not install new shingles over existing shingles. Replace existing ridge vents. - Only install Architectural roof shingles with a 30 year minimum verifiable warranty.
  - e. Install drip edge on all sides of the roof.
  - f. Install ice barrier extending from eave's edge to a point 24 inches beyond the exterior wall cladding.
  - g. Provide roof ventilation per the latest USBC for new construction.
9. When replacing flat roofs:
- a. Remove and dispose of existing roofing and above deck insulation, damaged vents and other items not in good condition.
  - b. Provide a minimum R-25 continuous insulation above the roof deck or provide a minimum R-38 insulation in the attic space.
  - c. New roofing is to have a minimum 20-year manufacturer's warranty.
  - d. Provide roof ventilation per the latest USBC for new construction.
10. Install walk pads that provide access to all rooftop equipment.
11. If equipment is installed on a roof, provide easily reachable access from an interior common area.
13. Exterior wooden trim, brickmold, sills, fascia, rake boards, and columns are to be clad with vinyl, vinyl coated aluminum, or similar materials. Use materials designed for cladding with a minimum thickness of 0.019 inch and provide a stiffening crimp for trim and fascia boards are more than 8 inches wide. Replace all damaged wood prior to cladding. CDA recommends the use of composite/manufactured materials instead of wood for exterior use. Exceptions may be considered for historic buildings.
14. When repainting existing or installing new exterior steel products; powder coat, galvanize or provide an exterior steel paint that can achieve a minimum 10-year material warranty. Prepare surfaces per warranty requirements. Prime and paint steel prior to placement in concrete.
15. When replacing exterior railings, handrails, guard rails, posts and pickets use vinyl, aluminum, or steel instead of wood.

16. When replacing siding:

- a. New siding is to have solid backing of plywood, OSB, gypsum, or similar material. Siding is to be installed over an independent drainage plane, such as Tyvek® or equal.

EXCEPTION: Exterior wall sheathing systems with integrated drainage planes may be used when observation reports are provided by the manufacturer and the following conditions are met:

1. Pre-installation

- a. General Contractor to hold pre-installation meeting with architect and manufacturer prior to installation. Manufacturer's observation reports to include documentation of meeting.
- b. Manufacturers' flashing details including windows, doors, joints and penetrations must be maintained on site.
- c. Store materials to meet manufacturer's requirements.

2. Installation

- a. The integral drainage plane must be preserved. Use manufacturer's approved products including tape, tape gun and roller.
- b. When weather conditions warrant, follow manufacturer's requirements for inclement weather installation and storage of materials.
- c. Manufacturer's representative to review the final installation to confirm all requirements are met **prior** to installation of exterior cladding. Manufacturer's observation reports documenting installation acceptance is required and must be maintained on site.
- b. Do not install new siding over materials such as vinyl siding, Thermo-ply®, or other flexible materials.
- c. Material such as T1-11, wood siding, or hardboard lap-siding may be used as backing for new siding, provided it is in good condition.
- d. Repair, replace, and re-nail all sections of damaged siding or sheathing to provide a uniform and flat surface.
- e. Fasten siding to framing with nails penetrating a minimum  $\frac{3}{4}$  of an inch into studs.
- f. Install mounting blocks for all penetrations in siding such as electrical, plumbing, HVAC, and ductwork etc.

17. All new panel type siding to be installed over vertical furring to allow adequate drainage and ventilation, or provide siding product with integrated vented rain screen.

18. The use of foil faced sheathing is prohibited.
19. Repair masonry walls having cracks and/or settlement. Replace damaged brick and point-up deteriorated mortar to match existing. Replace rowlocks for window sills that do not have a slope to drain water away from building. Prime and paint all metal lintels which are corroded, or not already painted. Remove abandoned items from brick and power wash/clean exterior of buildings.

## **2.WINDOWS & EXTERIOR DOORS**

20. Replace all damaged windows.
21. Replace single glazed windows with insulated glass.
- a. When window replacement is not permitted in historic buildings, repair or replace existing windows and install triple track operable storm sashes, with screens, over existing single glazed windows.
  - b. When conditions make storm sashes not feasible, provide an alternative solution acceptable to CDA.
22. When replacing windows and/or sliding glass doors:
- a. Provide minimum ½ inch thick insulated glass.
  - b. Provide minimum 10 year warranties for material and breakage of seal.
  - c. Provide thermal break for aluminum frames.
  - d. Provide new construction windows when replacing siding.
  - e. Provide back dam flashing at sill.
23. All windows are to have blinds, shutters, or other similar products, and sliding glass doors are to have vertical blinds. Replace all blinds that are damaged and/or do not match in color.
24. Repair or replace all damaged or dented doors, jambs and hardware.
- a. When replacing exterior doors, except sliding glass doors, replacement doors are to be insulated fiberglass or insulated metal. Wooden door jambs and molding require composite material, such as FrameSaver® or equal, at their lowest points.
  - b. Solid core wood doors may be used where entrances are located in interior conditioned corridors.
26. Provide roofs/overhangs over entrance doors to all units and buildings that are accessed directly by residents or visitors. Provide a minimum 30 inches of overhang along the front and 12 inches along each side of the door; or the door

may be setback a minimum of 24 inches from the face of the exterior wall.

### **3. FLOORING**

27. Replace all damaged Gypcrete, or similar material, floor sheathing and floor joists.

28. Install an area approximately 3 feet by 4 feet using materials such as VCT, sheet vinyl, hardwood flooring, or tile at the interior of all entrance doors, except for doors entered through carpeted interior hallways.

29. Repair or replace all damaged, stained, or mismatched flooring. Upon inspection, replace or seal damaged or stained underlayment, or underlayment which gives off odors. On a room by room basis, all flooring must match in color and design. All rooms must have finished floor and base.

30. Resilient flooring such as, but not limited to, sheet vinyl and VCT is to be installed over minimum nominal ¼ inch underlayment grade plywood, or similar underlayment material. Ceramic tile or similar flooring is to be installed over minimum nominal ¼ inch cementitious board or similar underlayment material. Flooring may be installed over concrete provided concrete is finished smooth and uniform. When installed over Gypcrete, or a similar material, apply manufacturer approved sealer.

31. Carpets are to have the minimum number of seams. Seams are not to be located in heavy traffic areas. T-seams are not acceptable except in closets. Remove shoe molding/quarter-round molding before installing carpet.

32. Provide a pass-through opening with counter space when kitchen and dining/living areas are separated by a wall.

### **4. INTERIOR WALLS, SURFACES, & FINISHES**

33. Interior finishes: doors, moldings, paint, and drywall.

a. Replace all interior bifold, pocket, or sliding doors with side hinged doors.

b. Repair or replace all damaged doors and trim. Doors previously cut to allow for modifications, such as adding vents, must be replaced with factory assembled louvered doors.

c. All doors, door trim, and door hardware in a unit are to match in design and finish. d. Install or undercut doors a minimum of 3/4 inch clear to prevent dragging and to provide ventilation.

e. Paint bottoms, tops, and all other sides of new doors.

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- f. All new doors must be factory assembled.
- g. All base and base moldings in a unit are to be solid wood and are to match in design and finish. EXCEPTIONS:
  - 1. Ceramic or stone baseboard is acceptable at matching flooring.
- 2. Mechanical closets may use an alternative base material such as vinyl
- i. Repair flaws in drywall such as, but not limited to, holes, failing tape joints, cracks and nail pops. Replace all drywall that has mold, mildew, or signs of moisture.
  - 1. When drywall replacement is required, match adjacent type and thickness.
  - 2. Nail pops and settling drywall must be re-screwed to framing.
  - 3. Repairs, including previous repairs, are to match the adjacent surface and the unit's intended finish.
- 34. Repair damaged or compromised draft stopping and/or fire stopping
- 35. Concealed solid dimensional wood blocking (2x material) is to be provided for all new handrails, grab bars and wall mounted cabinets and accessories.  
EXCEPTION: Toggle bolts may be used at wall mounted accessories.
- 36. Replacement or repairs of tub and shower surrounds built of ceramic tile, marble, or similar materials are to be installed over minimum ½ inch cementitious board.

## **5. KITCHENS & BATHROOMS**

### **Cabinets**

- 37. When replacing kitchen cabinets and/or bathroom vanities all new cabinets are to comply

All cabinets are to be factory/manufacturer assembled.

All exposed portions of cabinetry must have factory applied finish.

Kitchen cabinets and bathroom vanities are to abut the side walls or provide a minimum spacing of 12 inches between wall and cabinets. Wall cabinets are to abut the ceiling/soffits or provide minimum of 12 inches between cabinet and ceiling/soffits.

- e. Kitchen wall cabinets are to be fastened to blocking with a minimum of four washer head cabinet screws; two in each upper and lower nailing strip for

each wall cabinet.

- f. Plastic laminate countertops are to be post formed, or have back splashes that are factory attached to the countertop and sealed.
- g. A side splash is to be installed where countertops abut walls.
- h. Install a cleanable surface, such as plastic laminate, metal, or ceramic tile to the side wall next to the cooking range when it is located directly adjacent to a wall.
- i. Remove and replace all drywall that has mold. Repair or replace all damaged drywall.
- j. Holes in cabinet backs for plumbing are to be drilled, and completely covered by escutcheon plates.
- k. Provide at least one base cabinet with drawer, minimum 15-inch-wide.

## APPLIANCES

- a. Replace all damaged and or dented appliances. All kitchen appliances in an unit are to match in color.
  - b. Provide 30-inch-wide range in all units. Provide range hoods or combination range hood-microwaves over the cooking ranges. Provide maximum 24-inch-wide range hood for all 20-inch-wide ranges.
  - c. Dishwashers are required in all units. Provide 24-inch-wide dishwashers.
  - d. All refrigerators are to be frost free. Minimum rated sizes of refrigerators are to be 16 cubic feet. Side-by-side models must open fully or have at least 12" of cabinetry between an adjacent sidewall.
  - e. Laundry equipment and connections shall be installed in a closet with doors. New locations may not be in a bedroom.
39. 40. Replace any item with an assessed original install date or equipment ID plate that places the item **at or older than**:

## MECHANICAL

Mechanical systems in renovated projects will be durable, operator-friendly, cost-effective, and will contribute to the reduction of Greenhouse Gas Emissions from the Maryland housing stock. Therefore systems will:

- 1. All units are to have a Heating, Ventilation, and Air Conditioning (HVAC) system. Sizes of HVAC equipment, ducts and diffusers are to be designed per heat gain/loss calculations. All units are to have ducted HVAC systems except as noted in #3 below. All ductwork must be concealed behind permanent construction unless otherwise approved by CDA.
- 2. When installing a new HVAC system including, but not limited to, traditional split systems, ducted mini-split or self-contained "packaged systems"

(similar to Magic-Pak and First Co): a. Replace both air-handlers and condensers at the same time.

b. R-410A refrigerant is required in all new HVAC equipment.

c. Verify if refrigerant lines are appropriate for new HVAC unit size and type. Lines not being replaced are to comply with all of the requirements of the manufacturer for using existing lines. Submit a letter from the manufacturer that states the use of existing lines will not reduce performance and/or warranty of the heat pumps or other air conditioning systems.

d. Condensate and refrigerant lines not located in the mechanical closet are to be concealed within the wall, ceiling, or floor systems.

e. Fire-caulk all penetrations in fire partitions and ceilings.

f. Seal air duct penetrations in unheated spaces.

g. When adding and/or replacing ductwork, air supply diffusers are to be located near windows in living rooms, dens, and bedrooms. Provide ducted return air grille. Provide a separate ducted return for each floor of townhouse units. Fiberglass ductboard is prohibited.

EXCEPTION: The mechanical engineer may locate supply diffusers at alternate locations with CDA's prior approval based on supporting calculations.

h. Provide pre-manufactured air filters.

i. Replace all diffusers and thermostats.

j. Air supply diffusers are to be located in living rooms, dens, bedrooms, kitchens, and full baths. k. Replace condenser pads that are damaged. Pads are to be concrete, solid vinyl, or similar materials. Level all condenser units.

l. Heat pumps to include auxiliary heat.

m. Main supply trunk line from air handler to branch duct shall be metal. Flex duct may be used only between main trunk line and supply diffuser.

3. Ductless Heat Pumps (mini-splits) may be used in efficiencies, 1 bedrooms or elderly housing development.

a. All mini-splits are to discharge condensate to grade through a pipe concealed within the exterior wall system.

b. Provide separate mini-split wall mounted unit for each bedroom, den or living room. c. Provide separate wired wall mounted thermostat for each mini-split wall mounted unit. d. Provide a heater with a thermostat or timer controlled heat lamp for all full baths.

4. All exhaust ducts are to discharge to the exterior of the building, and terminate into vent caps. Vent caps to be of a quality that will minimize repair and replacement.

5. Clean existing HVAC ducts and plenums. Verify duct sizes and air flows (cubic feet per minute at supply diffusers) are appropriate for HVAC system. Replace all

supply and return vent covers and diffusers. Seal all duct penetrations in unheated spaces. All existing ductwork located in crawl spaces, attics, or any unconditioned space, is to be properly insulated. Clean, service, and repair all HVAC units not being replaced.

6. All bathroom fans are to be in good working condition, cleaned, and ducted out to the exterior. Install fans in all bathrooms, including those with windows.
7. Electric baseboard heating and electric forced air heating shall not be used as the primary heating method.

## PLUMBING

Plumbing and related appliances in rehabilitation projects will be durable, operator-friendly, cost-effective, and will contribute to the prudent, sustainable use of natural resources by the Maryland housing stock. Therefore plumbing systems will:

1. Identify all water supply material types. Water supply is to have adequate pressure.
  - a. Replace all interior, exterior, and underground PB (Polybutylene) pipes such as “Quest” and “Big Blue” with current code accepted materials.
  - b. Replace all galvanized pipes with CPVC, copper, plastic or other approved materials.
3. Identify all sanitary pipe material types and replace all galvanized lines and traps with PVC.
4. All wet plumbing pipe to be solid wall construction (Cellular core pipe not permitted).
5. All floor drains and indirect waste receptors to receive trap primer or code approved drain trap seal device.
6. When replacing water heaters, installations are to comply with latest adopted edition of the *International Plumbing Code for New Construction*. Refer to Code for pan and drain specifications.
7. Clothes washing machines or connections for clothes washing machines are to have an IntelliFlow A2C WB automatic washing machine water shutoff valve with



leak sensor, or approved equal, or have a pan with a drain connected to the sewer system per applicable plumbing code.

8. When installing new wall-hung sinks, provide concealed arm type carrier.
9. All new tubs/showers and shower diverters are to have internal shut-off-valves or external shut-off valves with access panels.
10. Bathtubs, showers, and surrounds which will not be replaced, are to be refinished or repaired. Remove mold and stains, clean, and re-caulk all tubs, showers, and surrounds. The bottoms of all new bathtubs and showers are to have slip resistant/textured finish.
11. Bathrooms which include a **new** roll-in shower are to have ceramic or similar tile flooring. Roll-in showers are to be either:
  - a. Ceramic or similar tile floor with water proofing membrane extending a minimum 8" up walls. A minimum of 3'-0" of the bathroom floor is to slope back towards the shower drain at 2%, with a zero height transition between the bathroom floor and the shower floor,
  - or -
  - b. Pre-manufactured with a secondary floor drain located outside of the shower. The bathroom floor shall have a 2% slope towards the secondary floor drain. Provide silicone joint between bathroom and shower floor.
12. Seal around existing accessible and all new plumbing penetrations in floors, walls and ceilings.
13. Vanities within 12" of tub or showers must have plywood sides, backs and bottoms.
14. Where wall-hung lavatories, roll-under sinks or pedestal sinks exist in dwelling units, provide an alternate storage solution complying with code required reach ranges and other accessibility requirements, which may apply to the unit.
15. All new pipe is to be concealed behind permanent construction.

## **ELECTRICAL**

In rehabilitation projects, electrical systems and related appliances will be durable, operator-friendly, cost-effective, and will contribute to the prudent, sustainable use of natural resources by the Maryland housing stock. Therefore electrical systems will:

1. Size electric panels and service per load calculations.
2. Electrical panels with fuses are to be replaced with circuit breakers.
3. Use appropriate connectors for connecting aluminum wiring to electrical outlet and switches.
4. All switches, outlets and cover plates that are painted, damaged or worn, are to be replaced and are to match in color and design.
5. Provide ground fault outlets near vanities in all bathrooms.
6. All wiring for the interior and exterior of the building is to be concealed within the walls, ceiling or floor systems. Cable TV, internet and/or telephone wiring exposed within units may be accepted when fastened to the edges of baseboards and/or door casings and not crossing any portion of floors, doorways or openings. Exposed electrical service to the building is to be in conduit and run vertically to the meter without horizontal runs.
7. When replacing kitchen cabinets and countertops, electrical outlets for countertop, ranges, refrigerators, dishwashers, and other appliances are to comply with the latest applicable requirements of the *National Electric Code for New Construction*.
9. Kitchens are to have a minimum of one light fixture 4 feet long with either LED or two 32 watt fluorescent bulbs, or lighting fixture(s) that provide a minimum illumination of 30 foot candles distributed across all countertops.
10. Provide a minimum of one electric smoke detector with battery backup for each floor of units. Otherwise smoke detectors to be hardwired.
11. Exterior fixtures are to be LED, fluorescent, metal halide, high or low pressure sodium, or mercury vapor. Resident controlled exterior lighting is exempt. Provide exterior lighting to illuminate all parking areas, dumpster pads, building entrances and mailboxes with a minimum of one-foot candle of illumination. Provide illumination so that building numbers and apartment numbers are legible at night.
12. Seal around existing accessible and all new electrical penetrations.

## Bonus Standards

DHCD will award points for features that enhance long-term durability, life-style functionality, and surrounding property values. Higher cost/impact elements earn more points. Others will earn a single point.

- Exterior Impact, Functionality, & Durability - 2 points each:
  - o The building architecture, structure, and mass complement the existing neighborhood.
  - o Exterior architectural features and design elements add interest, appeal, or functionality and durability.
  - o Architectural accessories such as decorative door surrounds, larger window trim, corner eave, cornice and column details, or other special features are provided and are of composite or other durable materials.
  - o Trees, parking, fencing, and storage are designed and located to enhance the visual appeal and functionality of the project.
- Interior Functionality & Durability:
  - o A den/mini office of at least 35 square feet with an electrical outlet is provided to allow one household member to periodically work from home.
  - o Storage space exceeds the minimum of a four (4) square foot of closets per person in each bedroom as well as an entry coat closet, linen closet, utility closet, and additional storage for storing seasonal or bulky items. Closets intended for appliances (i.e. washer/dryer, HVAC) are not counted as storage space.
  - o A half bath is provided on the living/dining/kitchen level in layouts with more than one (1) story, and the bath is visitable. For single-story units, at least one (1) bath is visitable.
  - o Tub/shower surrounds are ceramic tile with cementitious backer board or backer board supported by the Tile Council of North America (TCNA) installation or better than builder grade quality fiberglass surrounds.
  - o Floor coverings are quality long lasting products. Hard finish flooring must be products with a verifiable ten (10) year or longer warranty. Bathroom floors are sheet goods with a ten (10) year minimum warranty or ceramic tile with sealed grout.

- o Kitchen cabinetry is plywood box construction, the doors are plywood or solid wood, and finishes and hardware are durable.

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